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A New Genus of Blind Beetles From a Cave in South Africa

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Among the minute feather-wing beetles collected by Borys Malkin in various parts of Africa during 1948–49 are specimens of a new genus of pale, blind, wingless Ptiliidae found in bat guano in Cango Caves, Cape Province, South Africa.

The only Ptiliidae previously found in caves were recorded from Europe. *Ptenidium coecum* Joseph (Joseph, 1882), found in two caves in Trieste Province, is described as eyeless, wingless, and pale yellow. In these respects it contrasts sharply with other species of *Ptenidium* found outside of caves. It is said to be related to *P. laevigatum* Erichs., a common species found in a wide variety of situations in Europe and North Africa (Horion, 1949) but occurring chiefly in decaying vegetation, animal dung, and mammal nests; it has also been recorded a few times from caves (Wolf, 1934–38). Recently, another species, *P. ponteleccianum* Strassen (1955), has been described from a single individual found in a cave in Corsica. This species is also related to *P. laevigatum* but it lacks the vestigial features of *P. coecum*. The other records of Ptiliidae from caves (Wolf, 1934–38) are those of four European species that are normally found in other habitats and are probably only accidentally or occasionally present in caves.

The new genus from Africa shows many of the features associated with cavernicoly—it is blind, wingless, and pale in color. Many species of Ptiliidae found outside of caves, however, are dimorphic or polymorphic with respect to these characters. A number of genera such as *Ptinella* and *Pteryx*, which occur mostly in logs, under bark, and in tree-holes, have both normal and vestigial individuals in nearly all the described and undescribed species that I have examined. The vestigial individuals are usually much more numerous than the normal ones and in many species the eyes, wings, and body pigmentation are as much reduced as in the new African genus. This

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situation is virtually unparalleled in the entire order of the Coleoptera and merits future examination and analysis. While all the specimens in the large sample (more than 350 specimens) of the Cango Cave genus are vestigial, there is still the possibility, in view of the prevalence of dimorphism in the Ptiliidae, that normal individuals may be found in the future.

In the same cave, Borys Malkin collected pale beetles of the family Carabidae. Simon (1896) described a new genus and species of spider, *Phanotea peringueyi*, of the family Agelenidae, from Cango Caves. It was described as not being blind but with eyes smaller than the non-cavernicolous genera it most approached.

An account of the geology of Cango Caves has been recently published by King (1952). A brief account of collecting in Cango Caves is included in a popular article by Borys Malkin (1952).

Malkinella, new genus. Figures 68, 69.

Type species.—Malkinella cavatica, new species.

A pale, blind, wingless genus; form convex, oval; elytra truncate at apex; head with an antennal groove beneath that is continuous with a similar groove on the under side of the prothorax, both grooves with the inner edge produced as a shelf. Mesosternum with the median portion overlying the mesocoxae and continued anteriorly as an obtuse carina. Hind coxae small, separated by about half their width; metasternum lateral to coxae produced for the reception of part of the hind femora. Apex of abdomen without teeth.

Form oval, convex. Head broad, deeply inserted into the pronotum. Eyes vestigial, not evident on slide preparations. Antennae (fig. 69, *a*) long, 11-segmented; segments 1–2 large; segment 3 inserted deeply into 2, tapering apically; segments 4–8 subcylindrical, approximately twice as long as wide, each with a sub-median whorl of about 6 long setae as well as a sub-basal whorl (except segment 4) of much smaller setae; segments 9–11 enlarged, 10 and 11 each with pale vesicular setae beyond the middle and with scattered normal setae, as well as the median whorls of about six strong, curved setae and the basal whorls of finer setae.

Pronotum (fig. 68, *c*) about twice as wide as long, sides evenly curved, widest at base, overlapping scutellum and base of elytra; very convex in cross section, sides meeting hypomera at an acute angle. Hind angles obtusely rounded, not produced. Scutellum broad, partly covered by pronotum. Elytra (fig. 68, *c*) truncate, together a little broader than long. Epipleuron (fig. 68, *d*) extending one-half length of elytron. Wings vestigial, not evident in slide preparations.

Under side of head (fig. 68, *e*) with antennal grooves delimited ventrally by a shelf-like projection of the genal area. Mentum trapezoidal. Maxillary palpi 4-segmented. Tentorium with a median spur projecting anteriorly from the transverse bar.

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Prosternum (fig. 68, *d*) short in front of coxae, shorter than least diameter of coxal acetabulum.

Mesosternum (fig. 68, *d*) carinate in front of coxae. Mesocoxal acetabula broadly contiguous internally. Mesopleural-metasternal suture directed laterally, convex anteriorly. Metasternum (fig. 68, *d*) more than three times as broad as long, projecting posteriorly between the hind coxae, which are separated by about one-half their width and by about one-tenth of the metasternal width. Lateral to the coxae, the metasternum is produced and partly covers the hind femora when they are retracted. Metendosternite with two divergent, dorsally ascending arms.

Abdomen not completely covered by the elytra, apical dorsal segments (IX and X) separate, pygidium (tergum X) without teeth. Tergum VII without the micro-pectinate hind margin that is characteristic of the Ptiliidae (Dybas, 1956). Six visible ventral segments, the first one impressed on each side for the reception of the hind femora.

Legs moderately short (fig. 69, *b–d*); posterior coxae small, subtriangular, laminate, separated by less than half their width; tarsi slender; tarsal claws simple.

Aedeagus (fig. 68, *a*) an asymmetrical curved tube without evident lateral lobes.

Remarks.—Malkinella is immediately distinguished from all other described Ptiliidae by its unique antennal grooves on the under side of the head and prothorax. The systematic position of the genus within the family is difficult to establish at present because of the lack of an adequate classification of the Ptiliidae. *Malkinella* resembles the *Acrotrichis* group in general habitus but the resemblance is superficial. *Acrotrichis* and its allies form one of the most distinctive groups in the family. In that group the pygidium and form of aedeagus are diagnostic. The pygidium is composed of terga IX and X fused, the presence of tergum X being indicated by a tooth on each side. The aedeagus of the male consists of a short symmetrical tube bearing a pair of hooks on the ventral surface.

The new genus has truncate elytra but lacks the distinctive characters of the pygidium and aedeagus of the *Acrotrichis* group. In these structures it resembles the pterycine group (Dybas, 1955) and is tentatively placed there, but it is not closely related to any described genus.

Malkinella cavatica, new species. Figures 68, 69.

Description (of dry paratype): Yellow-brown, shining; covered with fine, golden, moderately sparse, recumbent setae that are inserted in transverse, irregular rows.

General form oval, strongly convex. Head deeply inserted into apical foramen of pronotum, its anterior margin broadly arcuate. Antennae reaching to near base of pronotum. Pronotum at base overlapping scutellum and base of elytra, less than twice as wide at base as long; hind angles overlapping humeri, obtusely

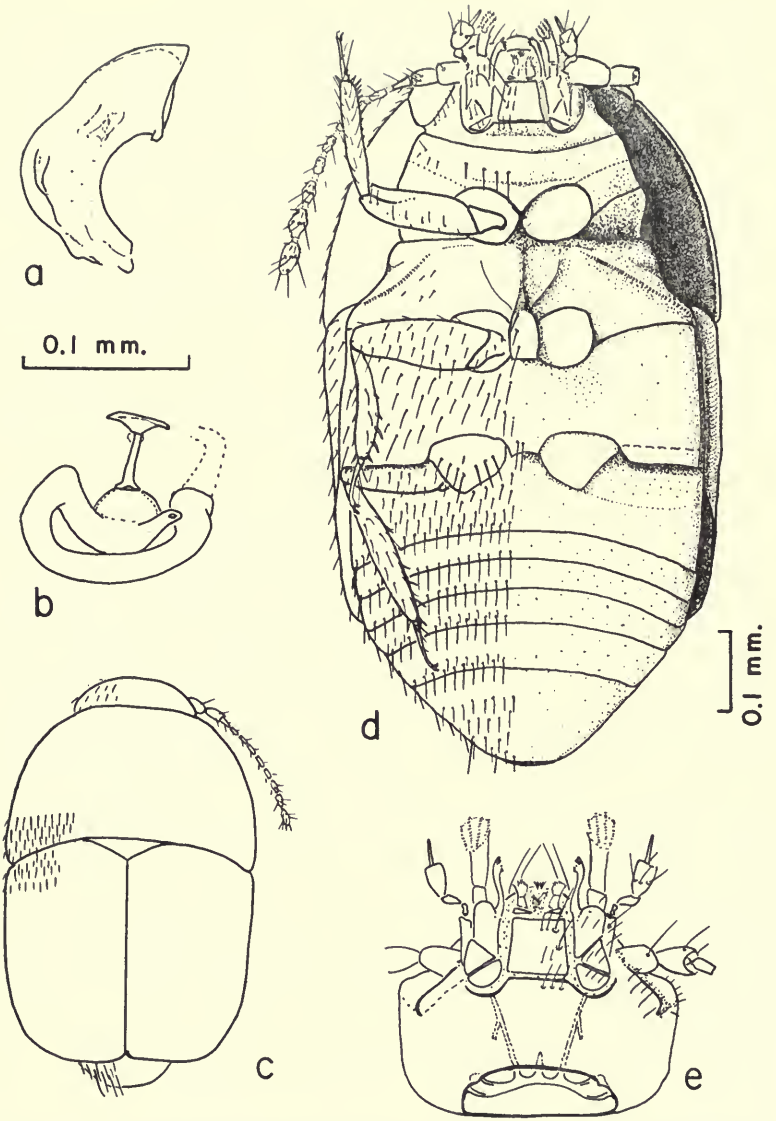

FIG. 68. *Malkinella cavatica*, new gen. and sp. *a*, Aedeagus, ventral view. *b*, Spermatheca, ventral view (same scale as *a*). *c*, Dorsal view. *d*, Ventral view, composite drawing. *e*, Head capsule, ventral view.

rounded from side view; pronotum widest just anterior to hind angles, thence increasingly curved to the apical foramen, which is one-half its basal width; sides finely margined, hypopleurae inflected at an extremely acute angle, nearly vertical. Scutellum very broadly triangular, nearly completely concealed by base of pronotum. Elytra together a little wider at base than long, each side slightly expanded,

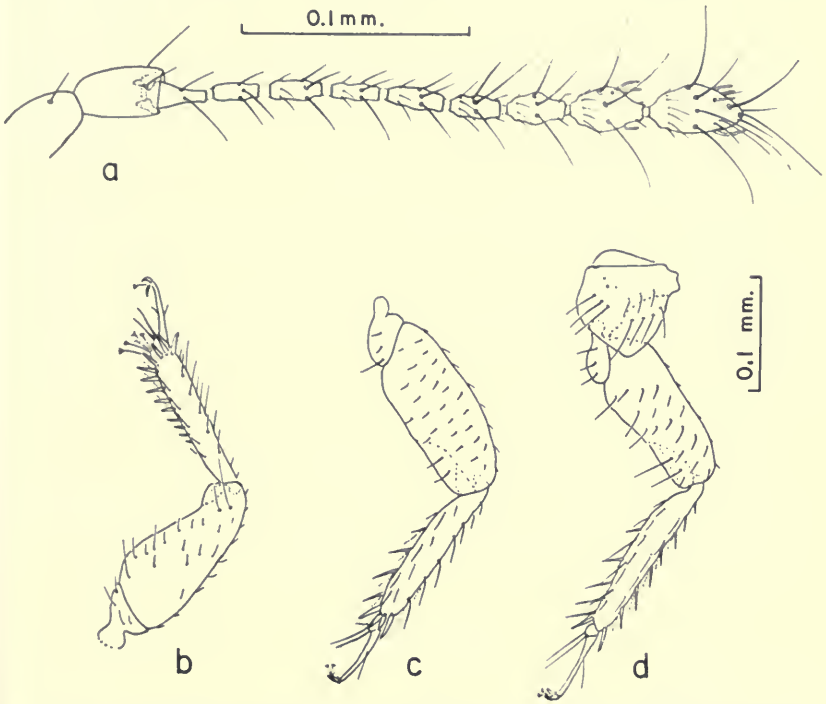

FIG. 69. *Malkinella cavatica*, new gen. and sp. *a*, Left antenna, ventral view. *b*, Anterior left leg, posterior view, male. *c*, Middle left leg, anterior view. *d*, Posterior left leg, anterior view.

margined, with a sharply inflexed epipleuron that is broadest at the humerus and then narrows to about the apical third of the elytron; sides slightly sinuate, converging gradually to near the apex, thence gradually rounded to the broadly truncate apices, which are a little rounded at the suture. Abdomen with the last three segments variously contracted.

Male with aedeagus as in figure 68, *a*. Female with spermatheca as in figure 68, *b*. Legs and antennae as in figure 69, *a–d* (drawing from microscope slide preparations).

Measurements: Length (to apex of elytra) 0.80 mm.; width 0.48 mm.; depth 0.31 mm.

Holotype.—A female, mounted on a microscope slide, from Cango Caves, Oudtshoorn, Cape Province, South Africa; collected October,

1949, in bat guano, by Borys Malkin. In the collection of Chicago Natural History Museum.

Allotype.—A male, same data as holotype, mounted on a microscope slide.

Paratypes.—A total of 369 specimens (not including fragmentary material), same data as the holotype; 5 mounted dry, 16 on microscope slides, and 348 in alcohol. In the collection of Chicago Natural History Museum except for 24 paratypes deposited in the collection of the Transvaal Museum, Pretoria, South Africa, and 12 paratypes deposited in the collection of the Institute Scientifique de Madagascar, Taimbazaza-Tananarive, Madagascar.

Remarks.—According to the notes of the collector, the specimens were collected in the cave in the first and largest chamber, which is about 200 feet long and nearly 70 feet high. There were thousands of bats present and their guano covered the floor of the cave to a depth of nearly 4 inches in places. In this guano, the ptiliids were present in great numbers.

Of 309 sexed individuals, 148 are females and 161 males.

Two associated ptiliid larvae were also collected.

I am pleased to name this distinct new genus for my friend, Borys Malkin, whose collections of Ptiliidae, made in many parts of the world, contain a wealth of new and interesting material.

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